

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Hill, et al.

Group Art Unit: TBD (Parent 1616)

Serial No.: TBD (Parent 09/689,231)

Examiner: TBD (Parent Pak, John D.)

Filed: January 29, 2004 (Parent October 11, 2000)

Docket No.: 50508-1053

For: Polyoxometalate Materials, Metal-Containing Materials, and Methods of Use Thereof

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

Sir:

This information disclosure statement is filed in accordance with 37 C.F.R. §§ 1.56, 1.97, and 1.98, and specifically:

- ☒ under 37 CFR 1.97(b), or
(within Three months of filing national application; or date of entry of international application; or before mailing date of first office action on the merits; whichever occurs last)
- ☐ under 37 CFR 1.97(c) together with either a:
☐ Statement Under 37 C.F.R. 1.97(e), or
☐ a \$180.00 fee under 37 CFR 1.17(p), or
(After the CFR 1.97(b) time period, but before the final office action or notice of allowance, whichever occurs first)
- ☐ under 37 CFR 1.97(d) together with a:
☐ Statement under 37 CFR 1.97(e), and
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Enclosed is a check in the amount of \$

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Please charge \$ to deposit account . At any time during the pendency of this application, please charge any fees required to Deposit Account 20-0778 pursuant to 37 CFR 1.25. The Commissioner is hereby requested to credit any overpayment to Deposit Account No. 20-0778.

- ☒ Applicant(s) submit herewith *Form PTO 1449A - Information Disclosure Statement by Applicant* together with copies (where required) of patents, publications or other information of which applicant(s) are aware, which applicant(s) believe(s) may or may not be material to the examination of this application and for which there may be a duty to disclose in accordance with 37 CFR 1.56. As required by 37 C.F.R. §1.98(a), a legible copy of each document is provided.
- ☐ A concise explanation of the relevance of foreign language patents, foreign language publications and other foreign language information listed on PTO Form 1449, as presently understood by the individual(s) designated in 37 CFR 1.56(c) most knowledgeable about the content is given on the attached sheet, or where a foreign language patent is cited in a search report or other action by a foreign patent office in a counterpart foreign application, an English language version of the search report or action which indicates the degree of relevance found by the foreign office is listed on the form PTO 1449 and is enclosed herewith.

The following rights are reserved by the Applicant(s): the right to establish the patentability of the claimed invention over any of the listed documents should they be applied as reference, and/or the right to prove that some of these documents may not be prior art, and/or the right to prove that some of these documents may not be enabling for the teachings they purport to offer.

This statement should not be construed as a representation that an exhaustive search has been made, or that information more material to the examination of the present application does not exist. Any statements or identifications regarding the relevance of any portion(s) of cited references should not be construed as a representation that the most relevant portion(s) have been identified, and the absence of such statements or identifications should not be construed as representations that there are no relevant portion(s). The Examiner is specifically requested not to rely solely on the materials submitted herewith. The Examiner is requested to conduct an independent and thorough review of the documents, and to form independent opinions as to their significance.

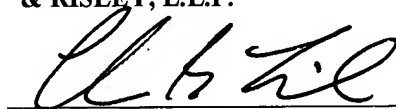
This is a Divisional of Application No.: 09/689,231. All patents, publications and articles listed on the attached Form PTO-1449 are available in the Parent Application file.

It is requested that the information disclosed herein be made of record in this application and that the Examiner initial and return a copy of the enclosed PTO-1449 to indicate the documents have been considered.

Respectfully Submitted,

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EXPRESS MAIL

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Form PTO-1449

Attorney Docket No.
050508-1053Serial No.
**TBA (Parent
09/689,231)****INFORMATION DISCLOSURE CITATION**Applicant
Hill, et al.Filing Date
January 29, 2004Group
**TBA (Parent
1616)***(Use several sheets if necessary)***U.S. PATENT DOCUMENTS**

| Examiner Initials | Item | Document Number | Date | Name | Class | Subclass | Filing Date If Appropriate |
|----------------------|------|--------------------|----------|--------------------|-------|----------|-------------------------------|
| | A | 3,387,916 | 06/11/68 | Clarke | | | |
| | B | 3,504,997 | 04/07/70 | Clapham | | | |
| | C | 3,925,006 | 12/09/75 | Forschirm, et al. | | | |
| | D | 3,947,332 | 03/30/76 | Vanderpool, et al. | | | |
| | E | 4,186,243 | 01/29/80 | Astbury, et al. | | | |
| | F | 4,444,592 | 04/24/84 | Ludwig | | | |
| | G | 4,639,432 | 01/27/87 | Holt, et al. | | | |
| | H | 4,714,482 | 12/22/87 | Polak, et al. | | | |
| | I | 4,870,010 | 09/26/89 | Hayes | | | |
| | J | 5,071,877 | 12/10/91 | Bannard, et al. | | | |
| | K | 5,093,134 | 03/1992 | Murrer, et al. | 424 | 617 | |
| | L | 5,292,558 | 03/08/94 | Heller, et al. | | | |
| | M | 5,356,469 | 10/18/94 | Jenkins, et al. | | | |
| | N | 5,603,927 | 02/18/97 | Fukumoto, et al. | | | |
| | O | 5,607,979 | 03/04/97 | McCreery | 514 | 759 | 05/30/95 |
| | P | 5,824,706 | 10/1998 | Schinazi, et al. | 514 | 492 | |
| | Q | 5,851,948 | 12/22/98 | Chuang, et al. | | | |
| | R | 5,908,647 | 06/01/99 | Golightly, et al. | | | |
| | S | 5,914,436 | 06/22/99 | Klabunde, et al. | 588 | 205 | 01/16/96 |
| | T | 5,928,382 | 07/27/99 | Reinhardt, et al. | | | |
| | U | 5,990,373 | 11/23/99 | Klabunde | 588 | 200 | 08/19/97 |
| | V | 6,020,369 | 02/2000 | Schinazi, et al. | 514 | 492 | |
| | W | 6,057,488 | 05/02/00 | Koper, et al. | 588 | 200 | 09/15/98 |
| | X | 6,224,885 | 05/01/01 | Jenner, et al. | 424 | 401 | 05/16/97 |
| | Y | 6,414,039 | 07/2002 | Braue, et al. | 514 | 759 | |
| | Z | 6,420,434 | 07/16/02 | Braue, Jr., et al. | 514 | 759 | 06/01/01 |
| | AA | 2003/0049330 | 03/2003 | Hill, et al. | | | |
| | AB | 2003/0072811 | 04/2003 | Hill, et al. | | | |
| | AC | 2003/0216256 | 11/2003 | Axtell, et al. | 502 | 417 | |
| | AD | 2003/0220195 | 11/2003 | Axtell, et al. | 502 | 417 | |

FOREIGN PATENT DOCUMENTS

| | | Document Number | Date | Country | Class | Subclass | Translation | |
|--|----|-----------------|----------|---------------|-------|----------|-------------|----|
| | | | | | | | Yes | No |
| | AE | 1,037,990 | 09/03/66 | Great Britain | | | | |
| | AF | 1,385,489 | 02/1975 | Great Britain | | | | |
| | AG | EP 242296A | 10/21/87 | Europe | | | | |
| | AH | EP 271337A | 06/15/88 | Europe | | | | |
| | AI | EP 426124A2 | 05/08/91 | Europe | | | | |
| | AJ | DE 300641A | 06/25/92 | Germany | | | | |
| | AK | DE 30001657A1 | 11/26/81 | Germany | | | | |
| | AL | JP 08296031 | 11/12/96 | Japan | | | | |
| | AM | JP 4035716 | 02/06/92 | Japan | | | | |
| | AN | JP 4054127A | 02/12/92 | Japan | | | | |
| | AO | JP 46036516 | | Japan | | | | |
| | AP | JP 50136488 | 10/29/75 | Japan | | | | |
| | AQ | JP 51791788 | 07/20/93 | Japan | | | | |
| | AR | JP 61185568 | 08/19/86 | Japan | | | | |
| | AS | JP 62013464 | 01/22/87 | Japan | | | | |
| | AT | JP 6815758 | 03/11/68 | Japan | | | | |
| | AU | JP 7251075 | 10/03/95 | Japan | | | | |
| | AV | SU 1783323 | 12/23/92 | Soviet Union | | | | |
| | AW | SU 801674 | 07/19/79 | Soviet Union | | | | |
| | AX | SU 834280 | | Soviet Union | | | | |
| | BY | WO 9203511A | 03/05/92 | PCT | | | | |
| | BZ | WO 94/20565 | 09/15/94 | PCT | | | | |
| | BA | WO 97/14401 | 04/24/97 | PCT | | | | |
| | BB | WO 99/53131 | 10/21/99 | PCT | | | | |

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

| | | |
|--|----|---|
| | BC | Chemical Abstracts 131:234039 (1999) |
| | BD | Chemical Abstracts 128:27274 (1997) |
| | BE | Holleman, et al., "Lahrbuch der Anorganischen Chemie", Walter de Gruyter, pp. 1097-1099, 1105-1106 (1985). German |
| | BF | Gall, et al., "Selective Oxidation of Thioether Mustard (HD) Analogs by <i>tert</i> -Butylhydroperoxide Catalyzed by H ₅ PV ₂ Mo ₁₀ O ₄₀ Supported on Porous Carbon Materials", Journal of Catalysis 159, 473-478 (1996) |
| | BG | Gall, et al., "Role of Water in Polyoxometalate-Catalyzed Oxidations in Nonaqueous Media. Scope, Kinetics, and Mechanism of Oxidation of Thioether Mustard (HD) Analogs by <i>tert</i> -Butyl Hydroperoxide Catalyzed by H ₅ PV ₂ Mo ₁₀ O ₄₀ ", Inorg. Chem. 1994, 33, pages 5015-5021, 1994. |
| | BH | Hulea, et al., "Thioether Oxidation by Hydrogen Peroxide Using Titanium-Containing Zeolites As Catalysts", Journal of Molecular Catalysis A: Chemical 111, 325-332 (1996). |

| | |
|----|--|
| BI | Walmsley, "Synthesis of A Heteropolytungstate and Its Use in Outer-Sphere Redox Kinetics", Journal of Chemical Education, Vol. 69, Number 11, 936-938 (1992). |
| BJ | Harrup, et al., "Polyoxometalate Catalysis of the Aerobic Oxidation of Hydrogen Sulfide to Sulfur", Inorg. Chem., 33, 5448-5455 (1994) |
| BK | Hill, et al., "The First Combinatorially Prepared and Evaluated Inorganic Catalysts. Polymetates For The Aerobic Oxidation of the Mustard Analog Tetrahydrothiophene (THT)", Journal of Molecular Catalysis A: Chemical 114, pages 103-111, (1996) |
| BL | Riley, et al., "Selective Molecular Oxygen Oxidation of Thioethers to Sulfoxides Catalyzed by Ce(IV)", Journal American Chemical Society, 110, pages 177-180 (1988) |
| BM | Zeng, et al., "Catalytically Decontaminating Dendrimers. Poly-Tris Arborols Covalently Functionalized with Redox Active Polyoxometalates", Proc. Erdec Sci. Conf. Chem. Biol. Def. Res., pp. 351-357, November 1997. |
| BN | Johnson, et al., "CW-Agent Detecting Barrier Creams" Emory Department of Chemistry, Proc. Erdec Sci. Conf. Chem. Biol. Def. Res. Pp. 393-399, November 1997. |
| BO | Rhule, et al., "New Polyoxometalate-TSPS for CW Agent Detection and Decontamination", Proc. Erdec Sci. Conf. Chem. Biol. Def. Res. Pp. 307-313, November 1998. |
| BP | Gall, et al., "Carbon Powder and Fiber-Supported Polyoxometalate Catalytic Materials. Preparation, Characterization, and Catalytic Oxidation of Dialkyl Sulfides as Mustard (HD) Analogues), Chemistry of Materials, Vol. 8, No. 10, pages 2523-2527 (1996). |
| BQ | Katsoulis, "A Survey of Applications of Polyoxometalates", Chem Rev., 98, pages 359-387 (1998). |
| BR | Hill, et al., "Carbon Powder and Fiber-Supported Polyoxometalate Catalytic Materials. Preparation, Characterization, and Catalytic Oxidation of Dialkyl Sulfides Mustard (HD) Analogues), Chemistry of Materials, Vol. 8, No. 10, pages 2523-2527 (1996). |
| BS | Riedel, "Light-Fastness of Pigments in Standard Color Depths," <i>Farbe Lack</i> , 74(4). |

* EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.

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